panied by its operculum, can be considered as complete, and every figure of the species wanting this important part must be equally imperfect; therefore it is much to be regretted that in several expensive modern works on Conchology, their artists and authors have neglected to figure the operculum of the species they have drawn; and especially as many of the specimens figured in Mr. Reeve's work, for example, have been taken from specimens in the Museum, or Mr. Cuming's collection, which had their operculum affixed on the shells, the absence of the operculum renders the excellent and characteristic figures contained in that work much less valuable than they otherwise would have been. I may add, the opercula were formerly supposed to be confined to the Gasteropodous Mollusca. They are well developed in the heteropodous genera *Atlanta* and *Oxygyrus*, the one being annular and the other spiral; and in the genus *Limacina* (or *Spirialis*) among the Pteropodous Mollusca. Some have supposed that the fossil Cephalopodous family *Ammonites* are provided with one, as an operculum-like body is often found in the cavity of these shells.

XLIV.—*On* Cannabis indica, *Indian Hemp*. By Alexander Christison, F.B.S.E., Member of the Royal Medical Society*.

The object of the present communication is to give some account of the Indian Hemp, a substance which has been long used in the Indian and Persian empires as a medicinal and intoxicating agent, but which was unknown to Europeans, except through the reports of travellers, until of late years. It was first brought into prominent notice by Dr. O'Shaughnessy of Calcutta in the year 1839.

It would be beyond the scope of this paper to enter minutely into the early history of the plant, but it may be observed that the narcotic properties of *Cannabis indica* were unknown to the Greek physicians. In the year 600 the Hindoos were in the habit of employing it, since which time it has been in constant use as a means of allaying pain, and more particularly as an intoxicating drug, among the inhabitants of the East. Hemp would seem to have been known at a still earlier period to the Chinese; in a communication to the Académie des Sciences in the early part of this year by M. Stanislas Julien, extracts are given from a Chinese work, showing that so far back as A.D. 220, a Chinese physician named Howshoa produced insensibility in his patients by means of a preparation of hemp, and that operations were then performed without pain to the patients. The veracity of this statement may however safely be questioned.

Until the year 1839 the properties of Hemp were never investigated in this country, but the essay of Dr. O'Shaughnessy published at that time attracted attention to the subject, and many experiments with

* Read before the Botanical Society of Edinburgh, April 11, 1850.

the drug have now been made. The expectations held out by him have not been so fully realized as one would be led to expect. This can however be so far explained by a want of confidence or neglect on the part of some who have employed the drug, and the use of spurious or ill-prepared substances on the part of others. From the marked success of various experimenters, it is obvious that the plant does possess useful properties as a medicine: these will be pointed out in a future part of the paper.

In Dr. Lindley's 'Flora Medica,' *Cannabis sativa* is placed in the natural order *Urticaceæ*, no allusion being made to the *Cannabis indica*, as he obviously considers the two to be identical. It is thus described:—Flowers diœcious, male flowers racemose; calyx 5-parted, imbricated. Stamens 5. Anthers large and pendulous. Female flowers in spikes. Bract acuminate, rolled round the ovary in room of a calyx. Ovary roundish, with one pendulous ovule and two long filiform glandular stigmas. Achænium ovate, one-seeded, embryo doubled up, with the radicle parallel with the plano-convex cotyledons, and separated from them by a small quantity of albumen.

He also states that it is an annual, 3 feet high, covered all over with an extremely fine rough pubescence hardly visible to the naked eye. The stem erect, branched, bright green, angular. The leaves alternate or opposite on long weak petioles, digitate, scabrous, with linear lanceolate sharply serrated leaves, tapering into a long smooth entire point; stipules subulate. Clusters of flowers axillary, with subulate bracts; the males lax and drooping, branched and leafless at the base, the females erect, simple, and leafy at the base. Male calyx downy; female calyx covered with short brownish glands.

Dr. Lindley now places this plant in the order *Cannabinaceæ*, separating it from the *Urticaceæ*, the latter having small flat stipules, limpid juice, a solid erect ovule, and a straight albuminous embryo; the former having a solitary suspended ovule and a hooked exalbuminous embryo. In the above description Dr. Royle agrees, who has seen the plant in India.

Two species of *Cannabis* have been described by botanists, viz. *C. sativa* and *C. indica*: but repeated careful comparisons have failed to discover any material difference between them; the generally received opinion now being, that the same plant under the modifying influence of climate and cultivation puts on a variety of characters. This opinion has been fully borne out by the result of an experiment in the Botanic Garden, which it may be interesting to detail.

A few seeds picked from fresh Gunjah were sown on the 17th of March 1849, as well as some seeds from decayed Gunjah: the latter never germinated, but the others appeared above ground in a few days; in the course of a week they attained a height of 3 inches under glass. Three shoots were planted in the open air, while the remainder were kept in the hothouse. On August 1st those without had attained a height of 4½ feet, and it was remarked that they had a peculiar strong *minty* odour. On the 1st October one of these was 9½ feet high, with several strong woody stems and abundant foliage: flowering appeared to be commencing, but owing to advance of the season

the leaves were withering. The plants in the hothouse at the same period were 4 feet high, slender, with few leaves, but in full flower. Plants of the common hemp growing in the Garden had a very similar aspect, being however in full fruit.

I am indebted to the kindness of Professor Balfour for the following remarks and botanical description of these plants:—"Those in the open air were all female plants; among those in the hothouse were one or two males. I have not been able to make out any specific difference between the so-called *C. indica* and *C. sativa* of Europe. The common hemp in the Garden has not attained the same size as the plants from Indian seeds, and the segments of the leaves are narrower; in other respects they appear alike, more especially as regards their flowers, glands, &c. Both the Indian and European seeds produce plants which have a strong resinous odour. In this respect the European plants in the garden seem to excel the Indian. On the Indian specimens even when cultivated in the hothouse there has not appeared any of the Churrus described by Indian observers. The racemes and spikes of flowers have a resinous feeling when touched. The following is a description of the plants raised from the Indian seeds:—

"*Flowers* dicœcious. *Male* plants in the hothouse about 4 feet high; circumference of stem at the base about one inch, lower part of the stem woody. *Stem* somewhat quadrangular, grooved and roughish; surface of the stem at the base of a brownish colour, mixed with greenish streaks. *Leaves* opposite, sap-green above, pistachio-green below, quinate to septenate, at the upper part of the stem the leaves become alternate; segments of the leaves feather-veined, with a prominent midrib below, lanceolate, acute, with large serratures. Stipules 2, subulate.

"*Flowers* in cymose axillary leafy clusters, some of them abortive. *Perianth* of five ovate blunt segments, which are of a pale green colour (the margins being white and the centre greenish) with a marked green midrib, covered externally and internally with glandular pubescence; segments of the perianth concave internally. Stamens covered with glandular pubescence, opposite the segments of the perianth. Anthers large, projecting beyond the perianth, oblong, bilocular, erect, with an apicilar process and longitudinal dehiscence, supported on slender filaments which are shorter than the anthers and have pyramidal bases; pollen spherical, with three facets, each consisting of a small ring in the centre of a larger one. In the centre of the flower there is the rudiment of the pistil.

"*Female Plants.* These are much stronger than the male plants, have attained a greater size, and have a stronger balsamic odour; those in the hothouse attained a height of 5 feet, and those in the open air $9\frac{1}{2}$ feet; stems hollow, 4 inches in circumference, with a tenacious stringy bark. Leaves covered with minute vesicular sessile glands, which give out a viscid resinous-like exudation, and are interspersed with glandular hairs. Flowers in aggregated spikes; usually three or more unibracteate flowers in a cluster in the axil of floral leaves which are often tripartite.

"*Perianth* monophyllous, convoluted, swelling at the base where it includes the ovary. Floral leaves, bracts and perianth covered with glandular pubescence.

"*Pistil* one. Ovary one, rounded, containing a single orthotropal erect ovule. Style short, terminal, ending in two elongate filiform pubescent stigmata. *Fruit* a caryopsis. Seed erect, marked with a coloured hilum. Embryo exalbuminous."

One or two remarks are suggested by this experiment:—1st. That the minute glands under favourable circumstances might act vigorously in producing the active resin. 2nd. That a certain climate which we cannot imitate is necessary to cause this action. 3rd. That the *C. indica* and *C. sativa* are identical; and 4th. That the Hemp plant possesses a peculiar odour of considerable strength, which is not alluded to in the standard works on Botany and Materia Medica.

It may here be observed, that the *Humulus Lupulus* or Hop, which owes its properties like *Cannabis* to a glandular resinous secretion, belongs to the same natural family and is endowed also with narcotic properties.

A short account will now be given of some of the principal forms in which Hemp is met with in the markets of the East; these are:—1. *Haschich*. 2. *Bhang*. 3. *Gunjah*. 4. *Churrus*. 5. A variety of electuaries, pastes, &c., in all of which butter or some other oleaginous matter is the basis of formation.

I. The first or *Haschich* is the Arabian name given to the dried tops of the plant grown in Upper Egypt, the meaning of the word being "herb," or "*herbe par excellence*:" the tops are gathered some time before the seeds are come to maturity.

II. *Bhang* is an Indian preparation consisting of the larger leaves and capsules, which according to Dr. O'Shaughnessy is the cheapest form used in India, and therefore in common use among the lower orders for smoking, &c.; from it is prepared an intoxicating drink, and it forms a part of the confection called Majoon.

III. *Gunjah* is the chief Indian form of the dried plant, and consists of the drier tops of *Cannabis* after flowering, and from which the resin of the leaves has not been removed; it is chiefly sold in the Calcutta bazaars for smoking, in bundles 2 feet long and 3 inches in diameter; the colour is dusky green, the odour agreeably narcotic, the whole resinous and adhesive to the touch. The specimens I have examined consist of a central stem with branches, round which are aggregated elongated oval masses about $1\frac{1}{2}$ inch long, and closely pressed together by adhesive resinous matter; when steeped in water these masses can be teased out, and are found to consist of the tops of the plant, that is, the flowers, fruit, and smaller leaflets.

IV. *Churrus* is the resinous secretion alone, and is therefore the most powerful shape in which hemp may be used; but it is at the same time expensive, and is not met with in Europe except as a museum specimen. The specimens in Dr. Christison's museum are variously-sized, nodulate, round masses from the size of a pea to that of a walnut, and of greenish black colour. It is collected during the hot season by scraping the leaves and tops. Dr. O'Shaughnessy states,

that in Central India and Nepal men in leathern dresses brush forcibly through the plants, and the resin which adheres to them is then scraped off. And Dr. McKinnon states that in Nepal the resin is gathered on the backs of naked coolies. Dr. Royle says, "The glandular secretion is collected from the plants on the hills, by the natives pressing the upper part of the young plants between the palms of their hands and scraping off the secretion which adheres."

V. In the preparation of the electuaries, &c., butter is used as the means of separating the active principle, consequently these compounds are very apt to become rancid. They are thus described by M. Charnac in the 'Annuaire de Thérap.' for 1846 :—

1. Preparations mixed with honey or melted sugar. 2. A more active form called *hachich kava-mesk* (musked drug), containing musk, essence of roses and almonds, of pasty consistence, and of the colour of impure honey ; the quantity used being about the size of a walnut. 3. Two kinds are found at Smyrna, called Israël, the one a fine powder, the other a roll of firm mastic consistence. 4. A black round kind has great aphrodisiac repute among the Fellahs, but in this case it is found that cantharides is added to increase the effect.

At Cairo the compound from which the various conserves are prepared is thus made. Equal parts of well sifted haschich, butter and water are put in a vessel on the fire ; after some boiling the water is dissipated ; the residue is twisted in a cloth to isolate the fatty matter, and to this the different spices are added.

Haschich is to the Arabians what opium is to the Turks and Chinese. Hachach, signifying in Arabian drunkard, is the epithet applied to those who eat haschich.

The Arabians smoke the powdered plant, free of seeds, which contain fatty, disagreeable-tasted matter, along with tobacco.

VI. Landerer describes a tincture of hemp used at Cairo, called Chatsraky, made by infusing in spirit for three weeks with a gentle heat, the varnish-covered bark sliced from the stems when the plants are in flower.

As the activity of the preparations of hemp depends on the presence of a resinous varnish on the leaves, and consequently as the most active of these is found to contain the largest quantity of resin, it becomes a matter of great importance to decide upon the proper period for collecting the plant.

M. Gastinell, an apothecary at Cairo in 1849, states that he found the active powers of hemp to depend on a resinous matter which forms on the leaves as the seeds ripen. Again, M. de Charnac observes, that in Egypt the tops of the plants are used at the end of flowering, but before complete maturity of the seeds. And Mr. Jameson, Director of the Botanic Gardens at Saharunpore, makes a like statement in a letter dated 17th August, 1849. As this letter contains an interesting account of Hemp in that part of India, it has appeared to me to be well worthy of a place in this essay. He says—"In Kimaon and Gurhwal *Cannabis* is grown in large quantities, partly in order to obtain its resinous secretion, and partly for its bark, from which a strong coarse cloth called *Bungila* is manufactured ; it forms

the dress of the poorer inhabitants, particularly through Gurhwal. It is sown in July and gathered in October. From the female plants only the Churrus is procured. Towards the beginning or middle of October the seeds begin to form, and when in this unripe state the upper part of the plant is pressed between the palms of the hands, it deposits upon them a yellowish green secretion, which is scraped off with a blunt knife: this is the well-known Churrus. From the male plant Bhang and Cath are prepared. Bhang is prepared by drying the leaves and other parts of the plants, both male and female, and is thus used:—A small quantity is put into a mortar with a little water and pounded; the refuse water being thrown away, an additional quantity of water is then added, from half a pint to a pint, depending on the strength required, and well mixed; it is then strained through a fine cloth, the residue thrown away, and the liquid is ready for drinking, a wineglassful or more being taken at a time. Gangah is the thin preparation, and is the produce of the upper portion of the stem, that is about 1½ foot; it is only used in the hookah to smoke; this also applies to the Churrus. The Gangah is carefully dried and mixed with an equal quantity of tobacco, and well rubbed together in the palm of the hand; it is then ready for the hookah. We have thus the three preparations:—1. Churrus. 2. Bhang or Lubzi. 3. Gangah or Ghangah. The first is only prepared on the hills, and the two latter are common to both hill and plain, but Bhang is principally prepared in the latter. At Bhacit, about sixteen miles from Saharunpore, it is prepared in large quantity, and is subject to a heavy duty; yearly from 40,000 to 50,000 maunds are produced (a maund is equal to 80 lbs.). The reason why the Churrus is not prepared in the plains is, because the plant does not secrete the resinoid principle, showing that its secretion is connected with climate. But still the plants are identical in external characters, and you will I think find that the European and Indian plants are also identical. In order to ascertain the fact, I send you a small packet of hemp-seeds procured at one of the Gurhwal villages where it is grown in vast quantity. In your letter you say that the active principle forms on the stems and leaves; this is not the case, as it is only procured when the seeds are in an unripe state;—attempt to procure it before this period, and none will be forthcoming. It will appear strange how ignorant natives can distinguish female from male plants—were you to see the plant growing your surprise would soon be removed. The female plant when ready for making churrus has at its upper part a "bunchy" appearance, whereas the male plants have become by this time mere stems and leaves, the flowers also having fallen off.

"In October, in crossing the Himalayas from Almorah to Missouri, I have passed through dozens of villages 6000 to 8000 feet above the level of the sea, and seen hundreds of men, women and children, all employed in making churrus. The plant grows to a height of from 10 to 14 feet."

The plants cultivated in the Edinburgh Botanic Garden present exactly the characteristic difference between male and female described by Mr. Jameson.

From these observations then it appears to be undoubted, that the only period for collecting the plant in its active state is that time when the seeds are beginning to ripen, when therefore the tops of the plants are covered with the resinous varnish on which its properties depend.

The resin secreted by *Cannabis* is insoluble in water, but soluble in rectified spirit; and it may also be separated by oily matters. By the action of spirit upon Gunjah the extract of hemp is formed. In this country two extracts are used, the one sent from Calcutta, and the other prepared in England from the dried plant. The best extract presents a dark green colour and is thick and tenacious; when pressed between the fingers it softens and adheres obstinately to them, a solvent being necessary for its removal;—any extract which is found to rub down in the fingers should be looked upon with suspicion, and will be found to be nearly if not almost totally inert. The finest extract I have seen is that prepared by Mr. Robertson, Professor of Chemistry at Calcutta, which however is not in the market. Of this Mr. Robertson prepared about 30 lbs.; from a hundredweight of the plant he obtained about 8 lbs. of extract. His process consisted in passing the vapour of boiling alcohol through the plant packed in a cask, an ordinary worm leading from the cask to a receiver; the preparing of it cost him much time and trouble on account of the heavy duties upon hemp and also upon spirit, and the expense he reckoned at 15*s.* a pound. On these accounts he abandoned the attempt to manufacture it in this way, and though he received large orders for it from various quarters, he felt compelled to refuse the undertaking. Specimens were sent for experiment to various parts of Europe, and among others to Edinburgh for Dr. Christison; this is now four years old and retains all its energy, and is much more active than the extracts of the shops which are formed by cold percolation. I repeated his process on a small scale and found it to be a very complete means of exhausting the plant, while at the same time the consumption of spirit is less.

Good extract should give a grass-green tincture with spirit, and when the tincture is of a brown colour it is weak or inert.

Various investigations have been made as to the nature of the resin secreted by the leaves of *Cannabis*, and it has been ascertained that a pure resin can be separated retaining the properties of the plant in full energy. Gastinell, apothecary at Cairo, has prepared this substance, of which he says 2 grs. are as effective as 6 of alc. extract. M. de Courtive of Paris says that the resin prepared by him is in the dose of $\frac{3}{4}$ gr. as effective as 30 grs. alcoholic extract. He also prepared the resin from Paris-grown hemp and from French hemp, 6 grs. of the first, and 8 to 16 of the second being necessary to produce the effect. Surely he cannot have obtained a pure resin, when such various doses are required; for the pure principle, from whatever source obtained, should possess exactly the same activity in every case.

The Messrs. Smith of Edinburgh have made careful experiments on this subject: they observe that the narcotic action of hemp resides

in a soft neutral resin called Cannabine, which when heated gives out a strong aromatic smell, and has a warm pungent balsamic taste; that it is insoluble in water or weak spirit, which is clearly proved in the following way—the addition of a fifth of water to a solution of the resin in strong spirit causes separation to begin, and all the resin is thrown down when a half of water is added. For a detail of their process I must refer however to the 'Pharmaceutical Journal' for 1846, merely observing at present, that in repeating the process with old Gunjah of 1840, ten per cent. of resin was obtained, answering to the characters given above; that the whole occupied a period of three weeks, and was very tedious. The following is a rough estimate of the composition of 8 oz. of Gunjah, used in my process:—

Resin	390 grs.
Nearly dry watery extract	500
Extractive by carb. soda	640
Vegetable fibre, &c.	2310
	3840

The physiological actions of *Cannabis indica* must now be considered, and the first question which presents itself is, whether this plant is a poison in large doses, and has it proved fatal to man? The prolonged use of it has certainly destroyed many in India, but no mention is made by authors of its proving fatal in one or two large doses. The only allusion to such an effect that I have seen, is that made by Mr. Reddie, a member of the Calcutta Bar, who in a letter to Dr. Christison, dated July 1849, says:—"The plant is a poison with many of the qualities of opium and some singular ones peculiar to itself," and that "it is frequently used at Calcutta as a poison." As this information was unsolicited, no details have been given, but Mr. Reddie has offered to give any additional information that may be required. Dr. O'Shaughnessy made a series of experiments on animals with the view of determining the quantity that it would be safe to administer as a medicine, but in none of these did death occur. In one experiment he gave 10 grs. churrus to a middling-sized dog. "In half an hour he became stupid and sleepy, dozing at intervals, starting up and wagging his tail as if extremely contented; he ate some food greedily; on being called to, he staggered to and fro, and his face assumed a look of utter and hopeless drunkenness. These symptoms lasted about two hours; in six hours he was perfectly well and lively. And again 20 grs. of ext. Gunjah, dissolved in spirit, were given to a dog of very small size. In a quarter of an hour he was intoxicated; in half an hour he had great difficulty of movement; in an hour he had lost all power over the hinder extremities, which were rather stiff, but flexible; sensibility did not seem to be impaired, and the circulation was natural. He readily acknowledged calls by an attempt to rise up. In four hours he was quite well. In none of these experiments was any pain evinced, or any convulsive motion." The dose mentioned above was the largest he gave; and the question remains, would yet larger doses have had a fatal effect? One point is however determined,—and Dr. O'Shaughnessy administered large

and repeated doses with benefit in treating disease,—that so large a dose as 10 grains of churrus did not prove fatal to a dog.

A very curious result of Dr. O'Shaughnessy's experiments is, that carnivorous animals and fish very speedily underwent the effects of hemp, while graminivorous animals were only very slightly affected even by large doses of the drug.

The physiological action of hemp is in the first place stimulant in small doses, exciting the cerebral and digestive systems; and secondly, when given in larger quantity its effects are powerfully sedative and antispasmodic; and at last it induces insensibility. A consequence of these properties is the extensive use of the compounds of hemp in the East for the purpose of causing intoxication, and the effects correspond to the natural disposition of the individual. In some mere laziness and stupidity are induced, in others a pleasing state of reverie without other remarkable condition; and many are attacked with loud laughter, fits of dancing and singing, venereal appetite, inclination to quarrel, according to the various dispositions. The aphrodisiac action is by most authors regarded as peculiar to the hemp, but on the other hand there are some who regard this effect as merely depending on the disposition of the individual.

But what really appears to be inherent in the plant is, that in all there is a remarkable desire for food; it is quite astonishing and at the same time very ridiculous to observe an individual under the influence of *Cannabis* eagerly devouring his food without stopping, and apparently without any intention of so doing.

It has been noticed by Dr. O'Shaughnessy and others in India, that in most cases the effect of hemp is powerfully aphrodisiac. After the stage of excitement, sleep supervenes; and on waking the experimenter returns to his natural state, except that the ideas are often confused for a little, and in some cases vertigo is present to a slight extent. An example of the great extent to which the use of hemp is pushed in India is given by M. Liautaud, in his communication to the Académie des Sciences, as follows:—

"The grand feast of Dourga Pondja is terminated by the ceremony of immersing the idol in the river; after which the people return to intoxicate themselves with a drink from the leaves of hemp, and the whole ends in a scene of disgraceful drunkenness;" and in allusion to the physiological action, M. Liautaud remarks, that "there is peculiar ecstasy without convulsion;" that "the drinks excite the nervous system more than the powder or smoke." "This intoxication has appeared to him much less intense than that of opium and that produced in the Chinese smoker; the consequences are not so deadly, but the moral degradation the same."

Dr. O'Shaughnessy thus described the delirium induced by the incautious use of hemp:—"The state is at once recognized by the strange balancing gait of the patient, a constant rubbing of the hands, perpetual giggling, and a propensity to caress and chafe the feet of all bystanders of whatever rank. The eye wears an expression of cunning and merriment which can scarcely be mistaken, there is no increased heat or frequency of circulation, and the skin and general functions are in a natural state."

An interminable variety of ideas enters the mind when under the influence of hemp. In the work of Moreau, 'Du Haschich,' some interesting details of these effects are given. Among others, M. Théophile Gautier, in describing his sensations, says:—"After a feeling of numbness, it appeared to him that his body became transparent, and that he saw within his breast the haschich which he had eaten, in the form of an emerald, from which issued millions of little sparks. At the same time his eyelashes became indefinitely elongated, and began to roll as gold threads upon small ivory wheels which revolved with great velocity." A very curious effect was an increase of his power of hearing, whereby slight noises became as loud as thunder, and he heard the noise of colours, green, red, blue and yellow sounds coming to him in perfectly distinct waves; he did not dare to use his voice in case he should knock down the walls or burst himself like a bomb. His calculation of the time he enjoyed these dreams was about 300 years; the fact being that only a quarter of an hour had elapsed.

Dr. Christison describes the effects upon himself as follows:—On trying Mr. Robertson's extract once for toothache, I found that about 4 grs. taken about 3 A.M. caused in an hour cessation of pain, a pleasant numbness in the limbs, giddiness, a rapid succession of unassociated ideas and impossibility to follow a train of thought, frequent intervals of sleep, and slight increase in the force of the pulse; at the same time he felt no pain, while he was quite conscious the toothache was present. Next morning there was an ordinary appetite, much torpidity, great defect and shortness of memory, extreme apparent protraction of time, but no peculiarity of articulation or other effect, and these symptoms lasted till 2 P.M., when they ceased entirely in a few minutes after taking lemonade.

One or two cases have come under my own observation; the first of these illustrates the less powerful and more gradual effect, when the hemp extract is taken in the form of pill. On the 3rd of April at 4 P.M., a friend took 2 grs. of the extract prepared by Mr. Robertson. At a quarter past six he felt as if weak, chiefly about the knees, with slight inclination to laugh; stupidity and forgetfulness, but without reverie; he continued in this state till he retired to bed, where he slept soundly. Next day he was perhaps more stupid than before, but was enlivened by drinking lemonade; he was not exactly himself till the following day; his appetite was strong, but he was not affected in any other way.

In the second experiment I took on the same day 1 gr. of the same extract dissolved in spirit, and though only half the quantity used in the first case, the effects were much more apparent. At a quarter past five, when sitting down to dinner, I felt a peculiar numbness creeping through my body and limbs; I did not think this was the action of the *Cannabis*, and began to fancy I was very ill, so that I could not eat my dinner; I lay down, and the numbness continued for a quarter of an hour, when my sensations became agreeable. I laughed heartily several times, answered questions incoherently, and immediately forgot what they were about; delightful reveries came over me, and whatever I looked at became lost as it were in a maze; the lamp appeared to

be slowly turning round, and when I lost sight of this, the red lines on the paper of the room appeared to intertwine in a most beautiful manner. The most remarkable effect was the constant succession of new ideas, each of which was almost instantly forgotten; when roused to tea I ate ravenously without feeling satisfied; I slept soundly, and next day was stupid and forgetful, but was much improved by drinking lemon-juice. On the following day I was quite recovered.

My friend Mr. Maclagan has kindly described for me his sensations under *Cannabis* on the same day as above; he says:—"I took 2 grs. dissolved in spirit and 1 gr. as pill shortly afterwards; this was at 4 o'clock. At a quarter to six when seated at dinner, and after taking a copious draught of water, I felt a curious buzzing in my ears, with slight tinnitus aurium and giddiness; two minutes after, burst into an immoderate fit of laughter without any cause; I was asked what I meant, but disdained to answer, and despite of rebuke I laughed on for about five minutes. I then retired, but after walking from room to room for some time, I found myself quite unable to appear with my family, and therefore went to Dr. Christison's house, experiencing however great impediment by my legs bending under me at various angles. At one time, thinking a man was in pursuit, I took to my heels, and did not stop till I reached Dr. Christison's door; when it was opened I laughed in the servant's face and walked upstairs, where I continued to laugh till Dr. Christison entered the room, when my laughter became aggravated, and his questions were only answered by monosyllables and grins; I lay down on a sofa, where delightful sensations continually occurred to me.

"At 8 o'clock I got tea and ate three slices of bread; voracity seemed to be my object; I again lay down and laughed and sang till 10 o'clock; many of my exclamations, I was told, were decidedly verging on the affectionate. I also raised my right leg at regular intervals, and then let it fall upon the other, for a long time."

Such are the observations which have been made on the physiological action of Indian Hemp. I might have entered upon its therapeutical effects in hydrophobia, tetanus and other diseases, but this subject being connected more immediately with medical practice, is not fitted for the Botanical Society.

PROCEEDINGS OF LEARNED SOCIETIES.

LINNÆAN SOCIETY.

June 19, 1849.—The Lord Bishop of Norwich, President, in the Chair.

Read "Descriptions of seventeen new species of the Coleopterous family *Paussidæ*." By J. O. Westwood, Esq., F.L.S. &c.

Genus Cerapterus, Swed.

Subgenus Orthopterus.

Cerapterus (*Orthopterus*) *La Fertei*, Westw.

C. piceo-castaneus nitidus lævis, pronoto magis fulvescenti-castaneo, elytris nigro-castaneis tenuissime punctatis: singulo plaga longitudinali